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ABSTRACT

A study was conducted to determine the effect of using a space test (marking word boundaries, a task involving setting aside words from the context of a sentence) as a measure of reading ability. Subjects in the study were 138 fourth, fifth, and sixth grade students. The students were randomly divided into two groups so that one group completed space tests on passages written at different readability levels, while the other group completed cloze procedures made from the same passages. ANOVA revealed a significant interaction between readability level and grade level for both the space and the cloze data. Consistent with earlier work, readability level of the passage had an effect upon performance on both the space and the cloze tests: the number of correct responses decreased as the readability level increased. All the students seemed to enjoy completing the space test, and the space test took much less time to complete than the cloze test. These results supported the hypothesis that a space test could, with further reliability and validity research, serve as an informal measure of reading in much the same way as the informal reading inventory and the cloze procedure. (RL)

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Space Test Scores as Compared to Cloze Procedure Scores

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Space Test Scores as Compared to Cloze Procedure Scores

Some of the early research in the area of word boundaries indicated that ability to perform on a word boundary task might be related to progress in learning to read. Mickish (1974) and McNinch (1974) seemed to provide evidence of a possible relationship between ability to mark word boundaries (a task that involved setting aside words from the context of a sentence) and reading performance among very young readers.

Other studies (Klein & Klein, 1972; Klein & Klein, 1973; Klein, Klein, & Doris, 1973; Klein, Klein, & Bertino, 1974) indicated that even after subjects of different ages had learned to read and obviously had the concept of visual word boundaries, they responded differentially to the word boundary-type tasks at different grade levels. These studies required that the students mark the spaces in between the words.

The results of a more recent study (Hecker, 1978), which used a word boundary format (Figure 1) adapted from the one developed by Klein and Klein (1972), indicated that performance on a word boundary task was associated with grade level and level of reading acquisition of the students. The study also indicated that the word boundary tasks correlated highly with cloze procedure tests and tests of word recognition, strongly suggesting that the three measures might assess similar traits.

Insert Figure 1 about here

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w h i l e s h e t r i e s n o t t o

p l a y f a v o r i t e s t h e

n u r s e s c l a i m t h e d o g

i n s t i n c t i v e l y k n o w s

w h e n o n e c h i l d i s

e x t r e m e l y d e p r e s s e d o r

s i c k w h e n t h i s o c c u r s

s h e w i l l s p e n d t h e n i g h t

a t t h e y o u n g s t e r s

Figure 1. Example of space test format as used in a previous study.

In designing the present study, two modifications were introduced:

1. The high scores obtained by many students and the number of students who reached the ceiling of the test (Hecker, 1978) suggested that marking spaces in between words was relatively easy when each line started with a complete word and ended with a complete word. Therefore, since the word boundary format previously used offered many clues for identifying the spaces in between words, a new box-like format (see Figure 2) was used which gives the task greater power of discrimination at the upper levels.

Insert Figure 2 about here

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2. Since the students with the concept of visual word boundaries well established were obviously reacting to something other than knowing the boundaries of words, a different name was given to the tasks that the students were asked to perform. The name was changed to space test since the task was that of identifying the spaces between the words.

The purpose of the present study was to determine the effect of using a space test as a measure of reading ability. Specifically, this investigation was designed to compare performance of students at different grade levels on a space test to their performance on a more commonly used reading measure.

w h i l e s h e t r i e s n o t t o p l

a y f a v o r i t e s t h e n u r s e s

c l a i m t h e d o g i n s t i n c t i

v e l y k n o w s w h e n o n e c h i l

d i s e x t r e m e l y d e p r e s s e

d o r s i c k w h e n t h i s o c c u r

s s h e w i l l s p e n d t h e n i g h

t a t t h e y o u n g s t e r s b e d s

Figure 2. Example of space test format as used in the present study.

Method

One hundred thirty-eight fourth, fifth, and sixth grade students drawn from the Spartanburg County District Four (South Carolina) schools participated in this study. The students at each grade level were randomly divided into two groups. One group was asked to complete space tests on passages written at different readability levels; the other group was asked to complete cloze procedures made from the same passages.

The tests were constructed from seven stories appearing in basal reader material unfamiliar to students in the Spartanburg County District Four (South Carolina) schools. The selection of stories was based on equivalent determination of difficulty by two readability formulas. The two measures were made from seven passages of 108, 112, 104, 110, 101, 114, and 117 words written at the second, third, fourth, fifth, sixth, seventh, and eighth grade levels respectively. The total space score per passage was the number of words within the context of the selection that were set aside by slashes (see Figure 3).

Insert Figure 3 about here

An every fifth word deletion pattern was used on each cloze procedure passage (Bormuth, 1968). This resulted in 16, 18, 21, 16, 20, 19, and 23 deletions for passages written at the second, third, fourth, fifth, sixth seventh, and eighth grade levels respectively. The total cloze score per

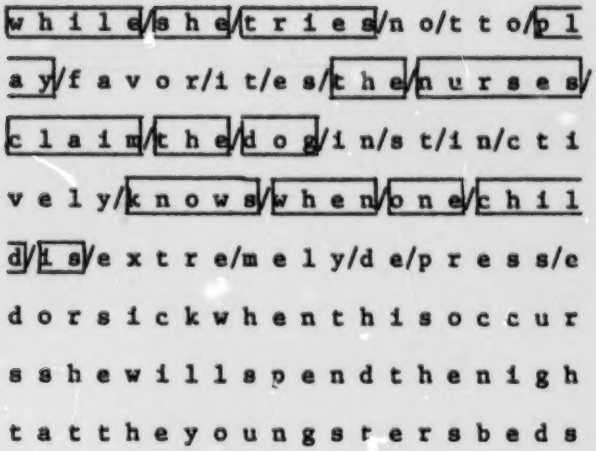

while/she/tries/no/t to/play/favor/it/es/the/nurses/claim/the/dog/in/st/in/ctive ly/knows/when/one/child/is/extre/mely/de/press/e dorsickwhenthisoccur sshewillspendthenigh tatheyoungsters beds

Figure 3. Correct word scoring of a space passage (score = 14).

passage was the number of exact words from the original text that were replaced by the student (Taylor, 1953).

A repeated measure (passage readability level) Analysis of Variance (ANOVA) design for both the space data and the cloze data was used. The results are summarized in Table 1.

Insert Table 1 about here

Results

The results of the ANOVA reported in Table 1 revealed a significant interaction between readability level and grade level for both the space and the cloze data. Consistent with earlier work, readability level of the passage had an effect upon performance on both the space and the cloze tests; the number of correct responses decreased as the readability level increased. The means (percent correct scores) for the space and cloze tests at each level of passage difficulty are presented in Table 2.

Insert Table 2 about here

Figures 4 and 5 show the interaction graphs for the space test and for the cloze procedure test at each passage readability level. The sharp decrease of means for passage level five in Figure 5 might be accounted

Table 1

Source Table for the ANOVA Design

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F	p
Space Data					
Between Groups					
Grade	3.94	2	1.98	16.67	<.001
Error	7.85	66	.12	---	
Within Groups					
Readability level	3.73	6	.62	59.64	<.001
Readability level x Grade	.22	12	.02	1.78	<.05
Error	4.13	396	.01	---	
Cloze Data					
Between Groups					
Grade	.05	2	.25	4.94	<.01
Error	3.35	66	.05	---	
Within Groups					
Readability level	18.98	6	3.16	274.24	<.001
Readability level x Grade	.31	12	.03	2.26	<.01
Error	4.57	396	.01	---	

Table 2

Means (Percent Correct Scores) for the Space and Cloze Tests at Each Level of Passage Difficulty

Passage Readability Level	Grade 4		Grade 5		Grade 6		$\bar{X}$	
	Space (N=23)	Cloze (N=23)	Space (N=23)	Cloze (N=23)	Space (N=23)	Cloze (N=23)	Space	Cloze
2	.31	.52	.52	.60	.58	.55	.47	.56
3	.30	.42	.49	.53	.56	.60	.45	.51
4	.26	.26	.40	.30	.51	.34	.39	.30
5	.22	.08	.36	.08	.44	.15	.34	.11
6	.21	.18	.29	.17	.37	.20	.29	.18
7	.15	.03	.24	.05	.36	.14	.25	.07
8	.14	.0	.23	.01	.31	.05	.23	.02
$\bar{X}$	.23	.21	.36	.25	.45	.29	.34	.25

for by the type of selection (factual rather than fictional) used at this level. This difference, however, was not observed for students taking the space test.

Insert Figures 4 and 5 about here

Final Discussion

The results of this study support the hypothesis that a space test could, with further reliability and validity research, serve as an informal measure of reading in much the same way as the informal reading inventory and the cloze procedure function. The following observations are worth considerations: 1) all the students seemed to enjoy completing the space test or at least they completed it with equanimity. The completion of the cloze procedure, however, was a frustrating experience for many students; 2) teachers are usually concerned about the time taken by the various classroom tests. The space test can be completed within a few minutes. For this study, the students were allowed three minutes to complete each passage. The students, however, required a much longer period to complete the cloze tests.

Before the space test is widely used several questions require further investigation. The first question concerns cut-off scores which the results of this study cannot offer. The second question concerns all

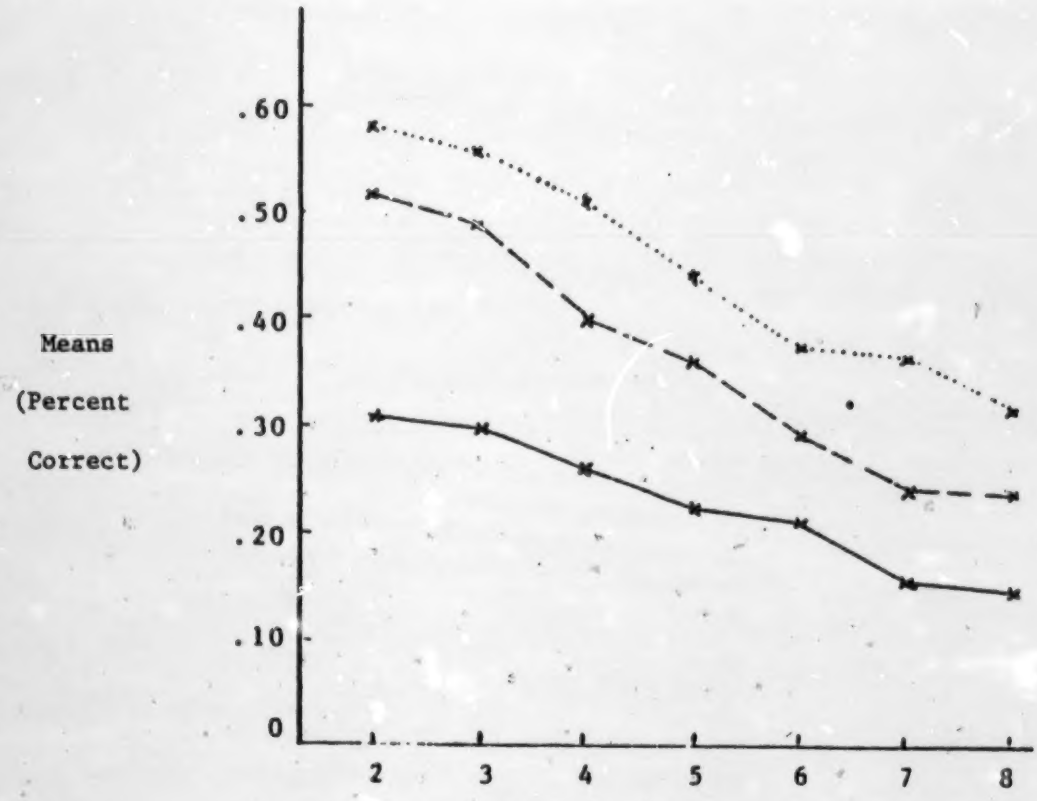
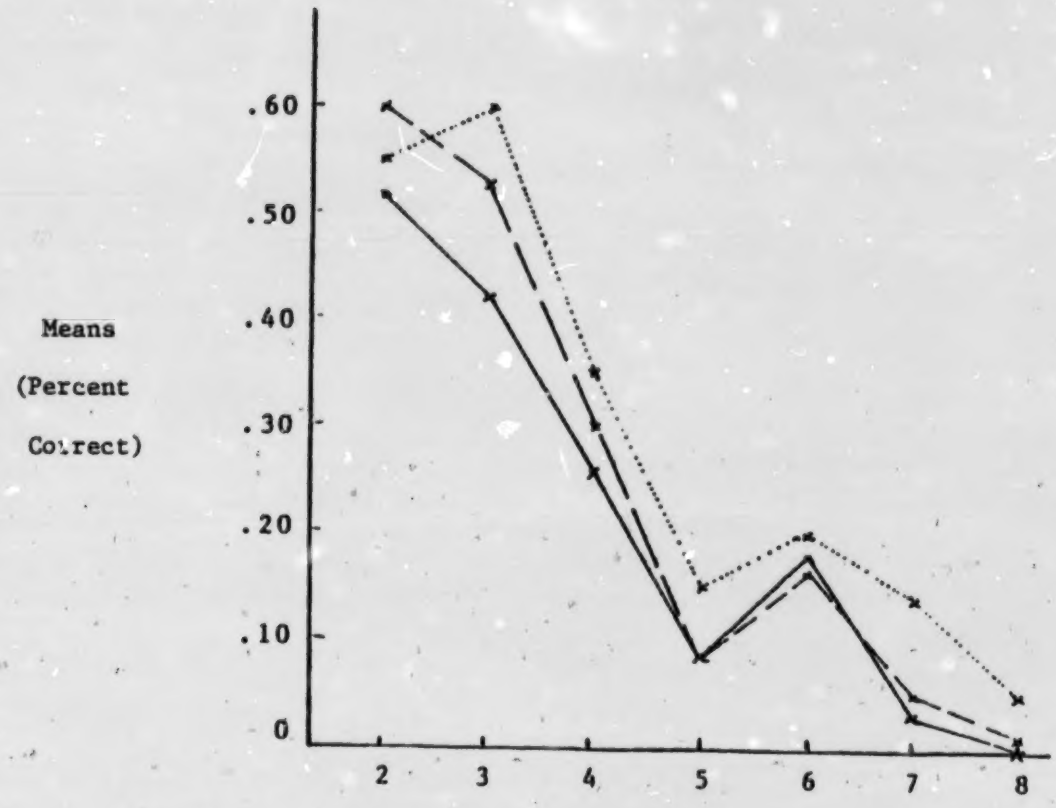


Figure 4. Interaction graphs for the space test at each passage readability level.



_____ fourth grade

- - - - - - fifth grade

. . . . . sixth grade

Figure 5. Interaction graphs for the cloze procedure at each passage readability level.

the grade levels where space testing might provide reliable results. It seems to work well for middle grades, but there are no data on how low or high it might be valid. Investigations should also be made with various subject areas. Finally, investigations which compare performance on the space test to performance on tests of multiple choice and teacher judgment might provide further insight into the use of a space test in the classroom.

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